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BROODING CHICKS
on the
FARM

By
R. B. THOMPSON

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INTRODUCTION

Poultry keeping today on the farm is being handled more and more as a business, and as such, business methods in brooding, feeding, housing, and other phases of the industry must be recognized and followed. No longer is the general practice of permitting hens to incubate eggs and hatch and brood chicks when and where they please followed. All of the chicks to be grown in one season are either purchased or hatched in incubators at one or two settings. With the old practice of hen hatched chicks, it was out of the ordinary to have chicks before May whereas now it is considered undesirable to hatch chicks after May 1. With the new business chicken, there is also a strong tendency to keep more chickens on each farm. All this means that the problem of proper brooding and feeding has been greatly enlarged. The first three weeks of the life of a chick is recognized as one of essential importance. Faulty brooding and feeding at this time will control the entire life of the bird, and show up particularly during the next winter of production. The ability to attend to details measures the success in brooding. Equipment must be ready and adequate, conditions must be right, and the routine of operation must be accurate, prompt and careful.

EQUIPMENT

Farm brooding is probably best done with the portable colony brooder house as the first essential piece of equipment. This type of house possesses many desirable features with economy. It is easy to clean, convenient to work in, and can be moved close to the house for early brooding and then to the field for the growing and developing period. A portable brooder house should not be over eight by twelve feet if it is to be moved with a team. Houses 10 x 12 or 12 x 16 feet are termed colony brooders, but are just a little too big to be moved on skids with success. With the portable colony brooder house, it is desirable to have two or possibly three ranges for growing chicks and rotate the chicks on these ranges from year to year. This will always assure clean growing range.

The shed roof type house is recommended for economy and convenience. The front of an 8 x 12 house should be eight feet high and the back six feet high. These heights will permit of ease in working in the house, and sufficient size for good ventilation. About half of the front should be covered with muslin and glass or a glass substitute of

some sort. The proportions of glass and muslin will vary with the season and outside temperatures. There should be ventilators or windows in the back that can be opened for summer ventilation. All openings should be covered on the inside with inch mesh poultry netting to keep the chicks in and cats, rats, and skunks out. The house may be built with or without a partition according to the ideas of the operator.

This 8 x 12 house will accommodate about 300 chicks. To determine the capacity of a brooder house, multiply the number of square feet of floor space by 3. The answer will be the most desirable number of chicks to attempt to brood in the house.

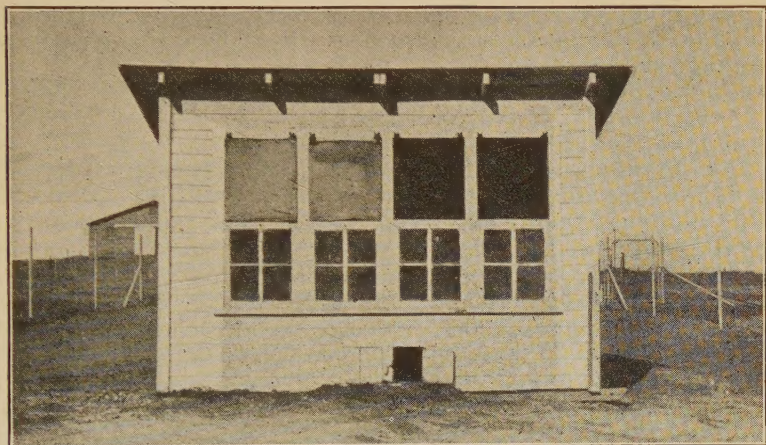
COAL STOVE BROODER

The coal stove brooder has been popular for many years and has developed in recent years, so that it is not now necessary to have hard coal to be successful with them. An ideal coal stove should have a large coal pot which will preferably be barrel shaped. The flue should be not less than four inch stove pipe. Even with the increased size of fire box and pipe the capacity of these stoves should not be overtaxed. A 52 inch canopy will accommodate not more than 350 chicks with best results. Care should be taken with the coal stoves to tend the fire early enough in the evening so that it will be in good condition for the night at bed time. Use sand on the floor under the hover of coal stove.

KEROSENE BURNING BROODERS

Several types of kerosene burning brooders are on the market. The chief difference in them being types of the burners. One type is the wick burner where regulation of the temperature is controlled by turning the wick up or down. This is done by the operator, and not by an automatic regulating device. Another type of burner is the asbestos ring or in some instances, a metal ring or vaporizer. The temperature in this type is regulated by a thermostat, which controls the flow of kerosene to the burner. Greater safety exists where the wick type burner is used, for with the ring burners and regulated flow of kerosene, the flame varies and as the room temperature lowers the brooder requires more heat and the flame goes up, often too high and a fire is the result. The wick type burners maintain a constant flame, and the hover temperature is regulated by a ventilating flue and damper operated by a thermostat.

The burner is located under the center of the hover with the kerosene reservoir outside the hover. All kerosene brooders must be set level by the use of an accurate carpenters level. Kerosene brooders require careful attention, and before attempting to operate one, the complete directions of the manufacturer should be studied well and then followed. It is a safety measure to use only sand under the hover



An 8x12 portable colony brooder house on Oklahoma Experiment Station Poultry Farm.

Windows are in and muslin frames are in brooder section. Note dirt embankment for chick runway.

or kerosene brooders. Curtains should be used with great care. Some wick type burners use curtains on the hover. A curtain is seldom used on the ring type burner brooders. It should be remembered that the kerosene burner requires ventilation as well as the chicks and without it trouble is sure to come.

Kerosene brooders should not be operated in large rooms without a stove to warm the room if the outside temperature is seventy or below. Smaller rooms may be sufficiently heated by the brooder fire, but if the chicks show discomfort from cold the room should be warmed. Do not attempt to operate kerosene brooders where there is a draught and use only good grade kerosene.

LAMP HOVERS

The kerosene lamp heated hover is quite satisfactory where the room used is free from draughts and yet well ventilated and warmed by some other source of heat during the day. The two common types of lamp brooders are the central heated and those having the lamp in a compartment at the side of the hover. The central heated are about thirty inches in diameter while those with the side lamps are about twenty-four inches in diameter. The capacity of each type is not over seventy-five chicks. If operated in a room where floor draughts exist, it is well to build a raised platform with 2 x 4 joists and inclines on four sides to the floor level. This platform should be at least four feet square not including the inclined approaches. These brooders are operated with curtains and require careful attention to the ventilation. Some have automatic ventilators operated by thermostats while others are ventilated only through and under the side curtain. Only the best grade of kerosene should be used in the lamp. Only a wick long enough to be at least two inches on the bottom of the lamp bowl should be used. Fill and regulate the lamp during the day, so that the flame will be permanently regulated before evening. Careful examination should be made to see that no leaks exist where fumes or smoke can get from the heat chamber into the chick compartment.

ELECTRIC HOVERS

The latest development in brooding equipment is the electric hover. There are several sorts on the market. In all electric hovers, the matter of ventilation is one which requires close and strict attention. Like oil burners, they will not furnish room heat during early brooding season; and at any time, this must be carefully watched. Manufacturers' directions of current connections and operations should be studied carefully. Their capacity must not be overtaxed. The rating of capacity in electric brooders is overstated as in other brooders. Generally speaking, a so-called 500 chick brooder will handle 250 chicks in good shape and a 1000 chick brooder will care for 500 much better than it will

1000. As a general policy, it will pay in all types of brooders to brood about half as many chicks in a brooder as it is rated to accommodate.

GAS BURNERS

There are a number of gas burners available for brooding chicks. A satisfactory way to use gas is in a coal stove. Several manufacturers provide gas burners for their coal stoves. In other cases, a burner can be fitted just under the grate. The fire box should be partially filled with coarse broken brick. The stove or burner must be ventilated.

In addition to the coal stove gas burners, there are Bunsen type burners that are for use under heat deflectors. These burners are generally operated at about eighteen inches from the floor. In any gas burning equipment, the pressure must be uniform or a regulator used in connection with the burner.

HOT WATER BROODERS

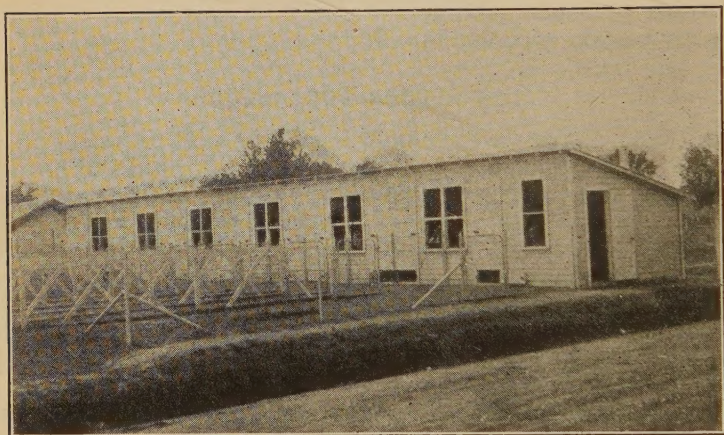
Hot water systems are generally used only in large brooder houses with capacity of two thousand chicks or more. A successful hot water brooder must have a large capacity boiler to furnish the hot water to the pipes which heat the hovers. Contrary to first impression, hot water brooders are not heated with steam but with water at temperature seldom over 180 degrees. In the past few years, there have been some home made successful hot water systems of small chick capacity. These have been heated with oil, gas, and coal burning boilers. Both bottom and top heat has been used with success. It is recommended that persons not familiar with the general principles of hot water heating and the action of hot water and hot water boilers not attempt to build a hot water brooding system.

FIRELESS BROODERS

Box like contrivances in which chicks are stored for the night have been termed by some as fireless brooders. It is an entirely unnatural condition to put chicks in a box and shut them up without ventilation or heat. Chicks cannot grow to the maximum of their ability to grow because they must secure both heat and nutrition from the feed they receive, and therefore, are classed as stunted. It is a common knowledge that stunted chicks do not make satisfactory layers or breeders. The use of the fireless brooder is not recommended.

STARTING THE BROODER

Have whatever kind of brooder is to be used in operation at least two days before the chicks are to be placed under it. It should be remembered definitely that the brooder is the chicks' mother except for time the person tending it is present. Put sand on the floor under the



Long type brooder house equipped with hot water brooding system. Front windows have been removed for summer. Note windows in back of house also open.

hover soon after the fire is started, so the sand will be thoroughly dry when the chicks are put on it. Any sand that is suitable for making concrete is suitable for chicks. It must be clean and rather coarse. Do not use blow or drift sand.

Cover the floor outside the rim of the brooder with about an inch of chopped alfalfa hay or cut straw. If straw is used, it must be clean and free from mold or dampness and should be bright. A tight floor covered with a thin layer of sand and straw is better than a poor floor covered with a thick layer. Clean the floor when straw or alfalfa becomes dusty or dirty. Never leave litter on the floor after it has been wet.

Temperatures of the brooder should be 100 degrees with the bulb of the thermometer at the edge of the hover and about two inches above the floor. This temperature should be maintained for the first week. After this time, the temperature should be lowered at the rate of about five degrees per week. The best indication of temperature conditions is the chicks. If the chicks crowd the stove, the temperature is low or there is a floor draught that chills them. If they hold away from the stove outside the edge of the hover, the temperature is too high. The temperature should be such that the chicks will be under the outer edge of the hover and not packed into a tight circle. Crowding into corners of the room away from the stove may be caused by either over or under heating. In either case, trouble will follow such crowding as it is the beginning of a habit that is most difficult to control or break.

To train the chicks where the stove is and where the limits of the brooder heat is, a guard made of hardware cloth or one inch mesh poultry netting doubled should be ready before the chicks are taken to the brooder. This guard should be about twelve inches high and long enough to make a circle around the brooder and touching or nearly touching the walls of the room. When the chicks are first put in the brooder, this circle should be only a trifle larger than the hover. The wire may be covered with burlap or muslin to shut off floor draughts where they exist. Floor draughts can be detected by vacant sections in the circle of chicks under the hover, or in some cases, the chicks will all crowd to one side of the hover. To cut off violent floor draughts, it is well to hinge together two or more pieces of twelve inch board about thirty inches long. These can be placed so as to protect the chicks from floor draughts or air currents that cannot be controlled or eliminated otherwise.

PUTTING CHICKS IN THE BROODER

Chicks are not ready to be put into the brooder before they are 48 to 72 hours old. The struggle the chick has had in getting out of the shell has taxed its strength and an undisturbed rest of 48 hours is

needed. During this time, the heat of the incubator and the chick join to dry the chick off. If taken from the incubator before thoroughly dry the chick will certainly chill. Nature has provided for this rest period by bringing the chick into the world with a stomach full of egg yolk. This yolk is sufficient nourishment for the chick for at least 48 hours.

The desirable time to put the chicks in the brooder is late in the afternoon. They will exercise a bit, perhaps get a little milk to drink and settle for another night's rest. Next morning they will be hungry, so attention should be given them early. Early does not mean two or three hours after daylight, but as soon as the chicks begin to stir. They will be just as hungry every morning thereafter.

OKLAHOMA A. AND M. COLLEGE WAY OF FEEDING CHICKS

1. Chicks are not fed until they are 48 hours old.
2. First feed:
 - A. Clean sour milk.
 - B. Bran and raw egg mixed to crumbly mash.

One large egg to four ounces of bran makes enough mash to give 125 to 150 chicks one feed. Clean boards with lath nailed around edges are used. Thirty-five chicks are allowed one square foot of feed board. Four to six feedings per day are given depending upon appetite and activity of chicks.
3. Third or fourth day the chicks get fine cut green feed and get edible green feed every day thereafter.
4. Fourth day dry mash in pans or boxes is placed before the chicks for an hour or longer. Boxes are made by nailing 1 x 4 sides around a 1 x 6 bottom. Seventy-five to 100 chicks have a box six inches wide and thirty inches long.
 - A. Dry mash:
 - 10 lbs. bran,
 - 10 lbs. shorts,
 - 10 lbs. yellow corn meal,
 - 3 lbs. alfalfa leaf meal,
 - $\frac{1}{2}$ lb. dried buttermilk,
 - $\frac{1}{2}$ lb. cottonseed meal,
 - $\frac{1}{2}$ lb. mineral mixture.

B. The mineral mixture :

3 lbs. fine bone meal,

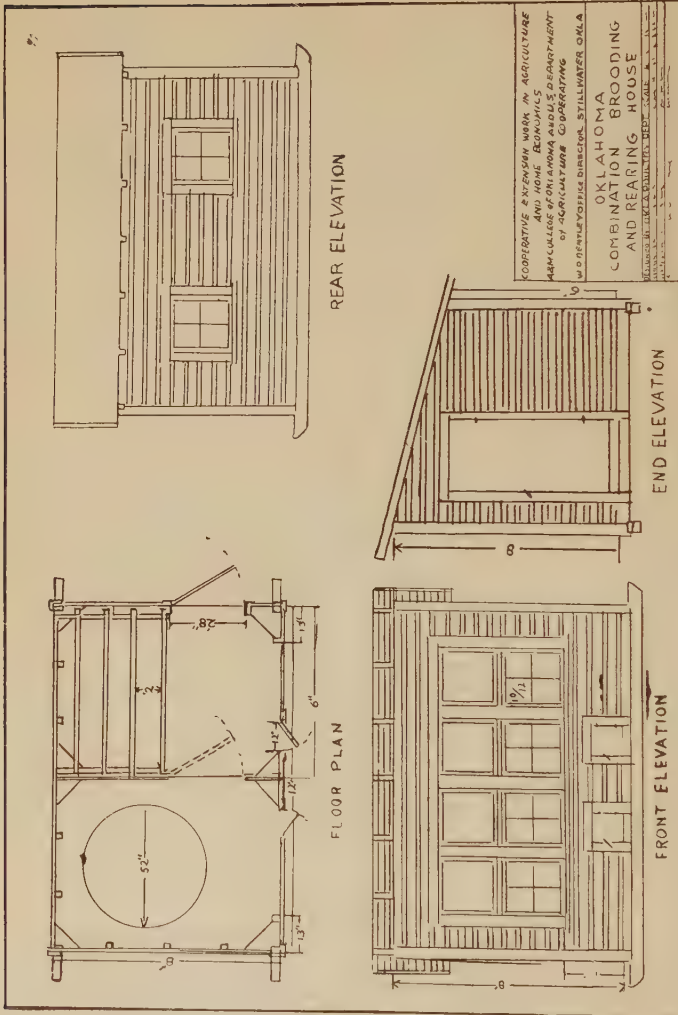
1 lb. calcium carbonate or high grade pulverized lime stone,

1 lb. salt.

5. Oat groats, coarse cracked wheat, medium cracked yellow corn, coarse cracked or small kafir or a mixture of them is scattered, at the rate of about one ounce to 200 chicks, on egg and bran mash beginning of fourth day.
6. Amount of grain is gradually increased and egg and bran mash decreased until two feeds of grain per day are being given by end of second week and bran and egg mash has been discontinued.
7. By end of second week the chicks have:
 - A. Dry mash before them all the time.
 - B. Scratch grain fed twice daily in shallow litter of cut straw on floor of brooder house.
 - C. Buttermilk or sour milk to drink all the time.
 - D. Fresh clean water to drink.
 - E. All the fine cut green feed they will eat every day.
8. The chicks are forced into the yards and sunshine as early as possible, by end of fourth day if weather permits. If cold or cloudy weather keeps chicks in house for more than three days after they are two weeks old, one pint of cod liver oil is added to each 100 lbs. of dry mash while they are confined to house.
9. After six weeks $\frac{1}{2}$ pound of meat scraps is added to the dry mash formula mentioned in number 4. If at 10 to 12 weeks the chicks seem to need additional protein another $\frac{1}{2}$ pound of meat scrap is added.
10. After six weeks about one-third of the grain is whole oats and two-thirds a mixture of all or any number of cubed yellow corn, kafir, milo, or wheat.

GET THE CHICKS OUTSIDE

Get the chicks out into the sunshine early. The saying used to be, get them out on the ground early, but it is definitely known that chicks can be successfully grown and never touch ground. In some sections where soil contamination is a problem, the only yard the chicks know is a concrete court. It is not the ground that counts, but it is where the chicks will get sunshine. Sunshine through muslin or glass substitute is some better than sunshine through ordinary glass, but



direct sunshine is best of all. For early season chicks, it is essential that they be protected from wind so that they will take advantage of the sunshine. Oklahoma farmers need not feed cod liver oil if advantage is taken of the sunshine and the opportunity to grow green feed.

CONVENIENCES AND APPLIANCES

A satisfactory water fountain is so arranged that the chicks can get plenty of water to drink, but not drown and not be able to fill the fountain with dirt and litter by scratching. A star shaped fountain that screws on a glass fruit jar is a satisfactory fountain for baby chicks. It is best to set it for the first week on a one inch block four inches square. Four nails, one at the inside angle between each star point will hold the jar in place and put it high enough to keep clean. After a week or ten days, the block should be a 2 x 4 or 2 x 6. It is desirable to have two sets of jars so that one can be washed and ready for use when the dirty one is removed each morning.

Perches should be available to the chicks by the time they are three weeks old. They will begin to form the habit of getting on perches then if available, otherwise, they will likely begin to form the habit of roosting on the floor. Watch the chicks hop on the perches during the day and enjoy life. Crooked breast bones are not likely to be caused by early perching if the chicks are properly fed. One by two strips nailed to a frame covered with one inch mesh poultry netting make splendid chick perches. The top should not be over twelve inches high, and the bottom may be only two or three inches from the floor on a sloping set of perches four feet square. The bottom one or two perches might even be under the edge of the hover to good advantage.

It is frequently necessary to visit the chicks after dark. On such visits it is best not to throw a direct light on the chicks as they will crowd away from it and not move back to their original positions when the light is taken away. If a flashlight is used, throw the ray or beam on the ceiling or walls and work by the reflected light. If a permanent electric light is used, arrange a reflector that will keep the direct light off the chicks. With a lamp or lantern a reflector can be attached that will throw the light away from the chicks in a satisfactory manner.

Keep the chicks growing by keeping them happy, contented, and full of feed. As soon as they are in the brooder, begin the task of providing green feed and shade for them during the coming summer. If trees are not available, alternate rows of sunflower, sudan grass and corn or kafir should be planted. These will provide shade. During the summer, keep the mash boxes and water crocks in the shade so the chicks will eat more during the day. Green swiss chard and sudan are fine for summer. Any green must be cut and chopped into quarter inch lengths and fed by hand if best results are to be obtained.

COST OF BROODING

The biggest cost of brooding chicks is mortality. Anything done to lower the loss of chicks will reduce the cost of brooding. Investment in good and sufficient equipment will time after time be repaid by increased number of chicks raised. The pullets grown out of chicks properly brooded will be able to repay in numbers and quality many times over the cost of good brooder equipment.

